Reference tracking via agreement: evidence from Washo switch reference*

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GLOW 42 – University of Oslo
7–11 May 2019

1. Introduction

Switch reference (SR) is a cover term referring to grammatical markers that appear to track whether the subjects of two clauses are coreferent (Jacobsen 1964:665, 1967, 1998; McKenzie 2015).

In **Washo** (Hokan/isolate; USA), switch reference morphology surfaces on embedded verbs.

⇒ Different subject (DS) morpheme *-š* appears if embedded subject ≠ higher subject (1):[1]

(1) [**Emily**$_i$ t'íšimáŋaw k'-é?-i **-š** -ge] **l**$_j$-ášašé:s-šemu-yi
Emily singer.good 3-be-IND-**DS**-NM.ACC **1**-know-really-IND
'I know well that Emily is a good singer.' Arregi & Hanink (2018)

⇒ Otherwise, same subject (SS) is realized as ∅ (2):

(2) [**šáwlamhu**$_i$ t'é:liwhu ∅-bó:ŋi-yi **-Ø** -gi] ?wá? **?**$_i$-é?-i
girl man 3/3-call-IND-**SS**-NM.NOM here **3**-be-IND
'The girl that called the man is here.'

There are three ways one could account for reference tracking of this kind:

1. Agreement (Baker and Camargo Souza 2018, Arregi and Hanink 2018, Clem 2018)

2. Binding (Finer 1985, Watanabe 2000, Broadwell 1997)

3. Control (Georgi 2012, Baker and Camargo Souza 2018)

We argue that switch reference in Washo is agreement-based.

We argue for this view based on the behavior of **overlapping reference**.

Outline
§2 *Switch reference as complementizer agreement*
§3 *Reference overlap in an Agree-based account*
§4 *Reference overlap in other accounts*
§5 *Conclusion*

*We would like to thank our Washo speakers, Adele James and the late Ramona Dick, without whom this work would not be possible. We would also like to thank Mark Baker and the audiences at WSCLA 22, NELS 47, DISC0 5 for their feedback on parts of this work, as well as four anonymous GLOW 42 reviewers for their comments.

[1]Glosses: 1/2/3: 1st/2nd/3rd person; ACCusative; DEPendent mood; DS: different subject; INDependent mood; NEGation; NM: clausal nominalizer; NOMinative; REC.PST: recent past; SS: same subject. IPA-deviating symbols are L [l]; š [ʃ]; y [j] (Jacobsen 1964). Data come from Hanink's fieldnotes unless otherwise noted.

2. Switch reference as complementizer agreement

2.1. Washo

Highly endangered Native American language spoken around Lake Tahoe in the United States.

- ≤ 10 elderly native speakers still living.
- Isolate; has been linked to proposed Hokan group (Campbell 1997, Mithun 1999).
- Neutral word order: SOV

2.2. The distribution of SR marking in Washo

Switch reference surfaces in a variety of embedded clause types.

1. Relative clauses (always internally headed in the language):

(3) [**mé:hu** géwe ?-í:gi-yi **-š** -ge] **lé:**-saʔ l-í:gi-yi
boy coyote 3/3-see-IND **-DS** -NM.ACC **1.**PRO-also 1/3-see-IND
'I also saw the coyote that the boy saw.' Hanink (2016)

2. Clausal complements of factive verbs:

(4) [**Emily** t'íšimáŋaw k'-é?-i **-š** -ge] **l**-ášašé:s-šemu-yi
Emily singer.good 3-be-IND **-DS** -NM.NOM **1**-know-well-IND
'I know well that Emily is a good singer.' =(1)

3. Temporal clauses:

(5) [**l**-émlu-ya **-š**] **ʔ**-íːmeʔ-leg-i
1-eat-DEP **-DS** **3**-drink-REC.PST-IND
'He was drinking while I was eating.' Washo Archive

Arregi & Hanink (2018): Switch reference in Washo is the result of agreement.

⇒ *Cannot* be captured with semantic accounts (i.a. Dahlstrom 1982, Stirling 1993, McKenzie 2012).

Switch reference in Washo is subject to **locality effects**: e.g., it is clause-bound (6).

(6) [[[**súkuʔ**$_i$ baŋáya ʔ-éʔ-i **-š** -ge] **daʔmóʔmoʔ**$_j$ bóːŋi-yi **-š** -gi] pʼáːšug-i]
dog outside 3-be-IND **-DS** -NM.ACC **woman** 3/3.call-IND **-DS** -NM.NOM 3$_i$.enter-IND
'The dog who was outside who the woman called came in.' Arregi & Hanink (2018)

In (6), the subject of the lowest and highest verbs are coreferent (*súkuʔ* 'dog')

But, they are separated by an intermediate different subject (*daʔmóʔmoʔ* 'woman').

⇒ Different subject marker surfaces on both embedded verbs.

2.3. Syntactic component: Agree with both subjects

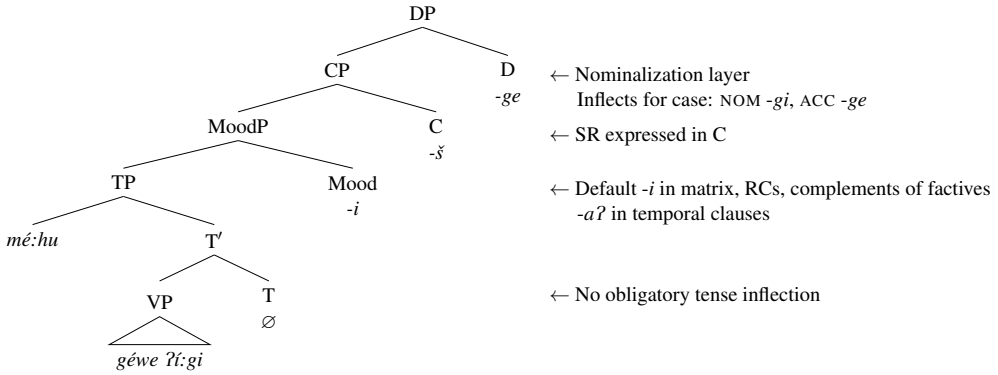
Different subject marker *-š* is a realization of embedded C (see also Finer 1985; Watanabe 2000).

Consistent with the morpheme ordering inside embedded clauses: DS is clause-peripheral.

Washo clause structure (Peachey 2006, Bochnak 2016, Hanink 2016, Hanink and Bochnak 2018):

(7) a. [**méːhu** géwe ʔ-íːgi-yi **-š** -ge] **léː**-saʔ l-íːgi-yi
boy coyote 3/3-see-IND **-DS** -NM.ACC **1.**PRO-also 1/3-see-IND
'I also saw the coyote that the boy saw.' =(3)

b.



← Nominalization layer
Inflects for case: NOM *-gi*, ACC *-ge*

← SR expressed in C

← Default *-i* in matrix, RCs, complements of factives
-aʔ in temporal clauses

← No obligatory tense inflection

Only D suffix follows SR marking in C.

Arregi & Hanink (2018):

Embedded C undergoes **Multiple Agree** (Hiraiwa 2001).

Agrees *downward* with the embedded subject

– cf. complementizer agreement in Germanic; e.g., van Koppen (2005)

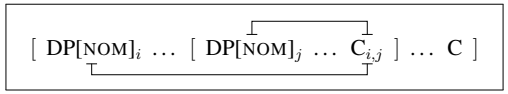
Agrees *upward* with the higher subject (i.a. Baker 2008, Zeijlstra 2012)

– cf. complementizer agreement in Bantu; e.g., Carstens (2016)

Agreement is for the **index feature** hosted within suitable DPs
(Rezac 2004; Hicks 2009; Kratzer 2009; Grosz 2015).

Embedded **C probe is case sensitive**: agrees only with nominative arguments
(Bhatt 2005, Baker 2008, Bobaljik 2008).

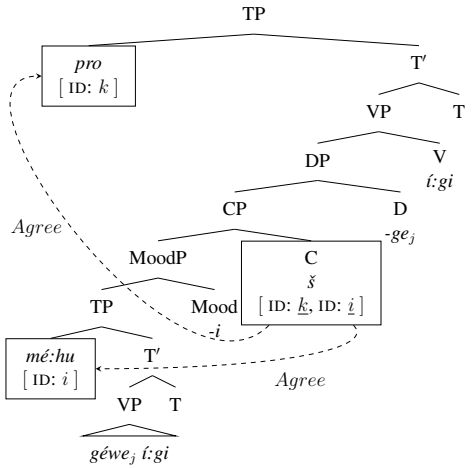
Step 1: Multiple Agree



An example with the different subject marker:

(8) a. [$_{DP}$ [$_{CP}$ **méːhu**$_i$ géwe$_j$ ʔ-íːgi-yi **-š**]-ge$_j$] **léː**$_k$-saʔ l-íːgi-yi
boy coyote 3-see-IND **-DS** -NM.ACC **1.**PRO-also 1/3-see-IND
'I also saw the coyote that the boy saw.' =(3)

b.



2.4. Postsyntactic component: The exponence of feature conflict

Both indices are copied onto C and are visible at Spell-Out.

C can have more than one ID feature (as long as the values are distinct).

Harbour (2007, 2011) on number in Kiowa:
Feature conflict allowed in the syntax, exploited by the morphology as a type of *inverse marking*.

The different subject marker is the reflex of such feature conflict.

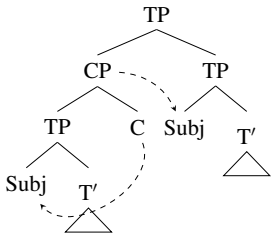
(9) **Step 2: Exponence of feature conflict**

a. $[_C$ ID:i, ID:j $] \leftrightarrow$ š (where $i \neq j$) *Different subject*
b. $[_C\ ] \leftrightarrow \varnothing$ (elsewhere) *Same subject*

2.5. Evidence for the Upward Agree component

Clem (2018) on Amahuaca: CP probes cyclically for the index of matrix and embedded arguments.

(10) *Clem 2018: Both Agree relations are downward, by Cyclic Agree (Béjar and Rezac 2009)*



CP Agrees downward with matrix subject

C Agrees downward with embedded subject

In Washo, the probe is too deeply embedded for it to Agree downward into the matrix clause.

C is embedded in a DP nominalization layer that also expresses case:

(11) $[_{DP}\ [_{CP}$ mé:hu géwe ʔ-í:gi-yi **-š**]**-ge**] lé:-saʔ l-í:gi-yi
boy coyote 3/3-see-IND **-DS -NM.ACC** 1.PRO-also 1/3-see-IND
'I also saw the coyote that the boy saw.' =(3)

Panoan: switch-reference marker and case information are fused (s.a. Baker & Camargo-Souza 2017).

– In Washo, the embedded clause marks SR and case, but these features are realized on independent heads: {*-š*, *-∅*} on C and {*-gi*, *-ge*} on D, respectively.

Agree with matrix subject is Upward in Washo.

3. Reference overlap in an Agree-based account

In cases of reference overlap, **SS and DS are optional**:

(12) a. [**Adele**$_i$ ga-sú:biʔ-i **-š** -ge] **lé:-ši**$_{i,j}$ gó:beʔ l-é:meʔ-i
Adele 3.OBJ-bring-IND **-DS** -NMNL.ACC] **1.PRO-DU** coffee 1-drink-IND
'We (=Adele and I) are drinking the coffee Adele brought.'

b. **lé:-ši**$_{i,j}$ gó:beʔ l-é:meʔ-i [**Adele**$_i$ ga-sú:biʔ-i **-Ø** -ge]
1.PRO-DU coffee 1-drink-IND [Adele 3.OBJ-bring-IND **-SS** -NMNL.ACC
'We (=Adele and I) are drinking the coffee Adele brought.'

(13) [**Emily** gé:gel-a -{**š, Ø**}] **Adele ida Emily** wagayáy-i *Embedded Sbj ⊂ Matrix Sbj*
[**Emily** 3.sit-DEP -{**DS, SS**} **Adele and Emily** 3.talk-IND
'Adele$_i$ and Emily$_j$ are talking while Emily$_j$ is sitting.'

(14) [**Adele ida Emily** wagayáy-a -{**š, Ø**}] **Emily** bašáʔ-i *Matrix Sbj ⊂ Embedded Sbj*
[**Adele and emily** 3.talk-DEP -{**DS, SS**}] **Emily** 3.write-IND
'Emily$_i$ is writing while Adele$_j$ and Emily$_i$ are talking.'

Two more additions to the analysis:

(15) a. The value of [ID] in plural DPs has one index for each individual in its referent. (Sportiche 1985).
b. In Washo, Agree copies **exactly one index** from the value of [ID].

Deriving DS/SS optionality in cases of overlap in Washo:

(16) [DP[ID:i] … C[ID:i,i]] DP[ID:**i**,j] *Copy **same index** from plural DP as singular DP*
SS

(17) [DP[ID:i] … C[ID:i,j]] DP[ID:i,**j**] *Copy **different index** from plural DP as singular DP*
DS

Extension to other languages:

(18) *Index Probe Parameter*
Agree copies **all/exactly one** index in the value of [ID] in the Goal.

Washo copies exactly one; in languages that copy all, the result is **obligatory DS**:

(19) [DP[ID:i] … C[ID:i,i,j]] DP[ID:**i,j**] *Copy **all indices** from plural DP*
DS

Correct prediction for languages of North America:
In overlap cases, SR can be optional DS/SS or obligatory DS

The generalization is more complex:

- In North America (McKenzie 2015): languages exist with (i) optional DS/SS, and (ii) obligatory DS. Obligatory SS languages are unattested, but this may be due to an absence of relevant data.
- Obligatory SS languages are claimed to exist in Papua-New Guinea (Roberts 2017), but:
  - The reported paradigms are not exhaustive, or the claim is not supported by negative evidence (e.g. Bruce 1984 for Alamblak, Roberts 1987 for Amele.)
  - Person and number are often relevant, suggesting an analysis in which the Probe copies features other than [ID], with potentially complex consequences for exponence.

  Similar conclusions for Panoan (Valenzuela 2003 for Shipibo).

4. Reference overlap patterns: Evidence against alternative accounts

4.1. Switch reference as control (Georgi 2012, Baker and Camargo Souza 2018)

- Georgi 2012: SS expresses control of the embedded subject by the matrix subject.
- Baker and Camargo Souza 2018: SS is agreement by C with the embedded subject and the operator in Spec-CP. The latter is controlled by the matrix subject.

⇒ SS in cases of overlap predicted as cases of **partial control**:

(20) a. Mary wanted to assemble in the hall. Mary ⊂ PRO
b. Sue expected to go on vacation together. Sue ⊂ PRO

Partial control is unidirectional: not possible if referent of PRO is a subset of matrix referent:

(21) *Sue and John expected to go on vacation by herself. PRO ⊂ S&J

But SS (and DS) in Washo is bidirectional:

(22) [**Emily** gé:gel-a -{**š, Ø**}] **Adele ida Emily** wagayáy-i *Embedded Sbj ⊂ Matrix Sbj*
[**Emily** 3.sit-DEP -{**DS, SS**} **Adele and Emily** 3.talk-IND
'Adele$_i$ and Emily$_j$ are talking while Emily$_j$ is sitting.'

(23) [**Adele ida Emily** wagayáy-a -{**š, Ø**}] **Emily** bašáʔ-i *Matrix Sbj ⊂ Embedded Sbj*
[**Adele and emily** 3.talk-DEP -{**DS, SS**}] **Emily** 3.write-IND
'Emily$_i$ is writing while Adele$_j$ and Emily$_i$ are talking.'

An additional argument by Clem (2018): Embedded argument can be overt.

4.2. Switch reference as binding (Finer 1985, Watanabe 2000, Broadwell 1997)

SS is an **anaphor** in embedded C, coindexed with the embedded subject by agreement. As an anaphor, it must be bound by the matrix subject. **DS** is a non-anaphoric **pronoun**.

Prediction for overlap cases: DS and SS should have the same distribution as anaphors & pronouns, but they don't in many languages (Rooryck 2006):

(24) *In overlap cases, pronouns are obligatory*
a. I saved us.
b. *I saved ourselves.

(25) *But lower referent must be a subset of higher referent*
We saved *me/myself.

But, Washo SR is optionally DS or SS, and subset relation can go either way, as in (22), (23).

The conclusion is tentative, as we need to replicate reflexive/pronoun patterns in Washo.

5. Conclusion

In SR, reference tracking is the result of agreement:

1. Agree from embedded C gathers the indices of the tracked arguments in the syntax.
2. Agree with matrix subject is Upward.
3. The postsyntactic exponence of the probe is sensitive to the resulting index feature specifications.

For Washo, this provides a correct account for overlap cases, where alternatives fail.

- Index Probe Parameter predicts that in overlap cases, SR is optional DS/SS or obligatory DS.

Much more fieldwork needs to be done to (dis)confirm the prediction.

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